ATX and microATX Chassis Gauge User Manual

Version 1.0

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Version 1.0, July 1998

Revision History

Version 1.0	First release of document

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Introduction

This document is a user/application manual for the ATX and microATX Chassis Gauge, Version 1.0.

The ATX and microATX Chassis Gauge is a volumetric test tool that is intended to assist in development and mechanical evaluation of ATX- and microATX-compliant motherboard designs and their corresponding I/O shields. By using the gauge, you can determine whether your motherboard and I/O shield meet the dimension and keepout zone requirements described in the *microATX Motherboard Interface Specification,* V1.0, or the *ATX Interface Specification,* V2.01. The chassis gauge helps you determine whether your board and shield are suitable to be installed in a compliant ATX or microATX chassis. The gauge is not suitable for checking Mini ATX motherboards.

By using the chassis gauge with your motherboard and I/O shield, you can do the following:

- Check whether your motherboard mounting hole locations comply with the ATX or microATX specification (mechanical conformity to a specification)
- Check whether any components on the motherboard violate maximum component height restrictions
- Check the chassis I/O shield position and dimensions
- Check the proper position of the motherboard with respect to the chassis I/O back wall, as well as proper I/O connector placement
- Check for ISA, PCI, and AGP add-in board connector placement

The specifications fully describe the keepout zones (maximum component height zones) for a motherboard. The difference between the two phrases is the difference between checking from the chassis in, or checking from the board up and out.

- Keepout zone: As defined in the ATX and microATX specifications, the phrase “keepout zone” refers to the space the chassis is not allowed to impinge on; keepout zones are checked by using the ATX and microATX ***board*** gauge.
- Maximum component height zone: As used in this ***chassis*** gauge document, the phrase “maximum component height zone” refers to the same air space except from the opposite view: the motherboard components are not allowed to impinge on this space.

At the end of this chassis user manual, there is a blank test log. Copy this log and use it to record the results of your evaluation for each motherboard and I/O shield design.

For information and details about ordering the chassis gauge or the board gauge, see the microATX Web page at:

http://www.teleport.com/~microatx

Description

The ATX and microATX chassis gauge includes the parts described below. The step-by-step procedures starting on page 6 include figures showing the parts.

Base Plate

The base plate is 12.4-inch × 14.6-inch (315mm × 371mm) and is constructed of red brushed aluminum. On the base plate you can mount a microATX board or up to a full-sized (12.0-inch x 9.6-inch [305mm x 244mm]) ATX motherboard. The base plate is larger than the largest allowable motherboard (per the motherboard specifications). (For more details, see Table 1 on page 11.)

Features:

- Standoffs
  - The base plate has a number of locating standoffs that correspond to the various mounting hole locations as detailed in the specifications. Although these standoffs can be removed (unscrewed) from the base plate, under normal circumstances you would leave them in place unless your motherboard interferes with a specific standoff—that is, if the motherboard does not have a mounting hole in a particular location.
  - One of the standoffs is specifically intended to be added to the base plate in either the "S" or "R" standoff location to accommodate microATX motherboards that use those standoff locations. This standoff is shipped installed on the underside of the base plate and can be left there when not needed for your specific evaluation.
- Add-in card connector alignment slots—The base plate includes seven slots used for checking the placement of PCI, ISA, and/or AGP add-in card connectors. Each slot corresponds to the correct position of a bracket tab on an add-in card; when an add-in card is installed in a connector on your motherboard that is mounted on the base plate, the tab on the card bracket should drop cleanly through the appropriate slot.
- I/O window boundary "posts" (two short black columns)—These posts are permanently affixed to the base plate to allow proper alignment and placement of the I/O window frame gauge.

I/O Window Frame Gauge

The I/O window frame gauge, when positioned on the base plate between the boundary posts, is used to check the following:

- The position of your motherboard I/O shield
- The dimensions of your I/O shield
- The proper alignment of the motherboard and I/O connectors

The gauge will verify the vertical height, the horizontal width, and the position of the I/O shield with respect to the proper placement of the motherboard.

The frame includes six notches that are used to check that any "frame" or bezel on the I/O shield does not extend beyond the allowed dimensions..

One long edge of the frame has a wider flange than the other; this side should be down. The underside of the wide flange has a green felt-like strip affixed to it to prevent metal-to-metal scratching during repetitive board and I/O shield evaluations.

Note

Do not remove the green strip; its thickness has been factored into the dimensions and fit of the gauge parts.

Plastic Covers

The chassis gauge includes two clear plastic covers, one each for the ATX and microATX designs (the covers are labeled). Each cover is shaped to represent the maximum allowed heights of components on an ATX- or microATX-compliant motherboard design. The different "steps" in a cover represent the allowed maximum component heights for specific keepout zones as defined in the specifications. The covers are used to identify any violations of allowed component heights. The gauge does not accommodate Mini ATX motherboard designs.

Procedures

To check for this:	Use these parts
Motherboard dimensions and mounting holes	Base plate with your motherboard
Add-in card connector locations	Base plate with your motherboard (check the slots for add-in card bracket tabs)
Violations of maximum component heights on motherboard	Base plate with your motherboard and the ATX or microATX plastic cover
I/O shield dimensions and location	I/O window frame gauge and your I/O shield
Motherboard I/O connector compliance	Base plate and the I/O window frame gauge plus your motherboard and I/O shield

Check the Board Dimensions, Holes, Card Connectors

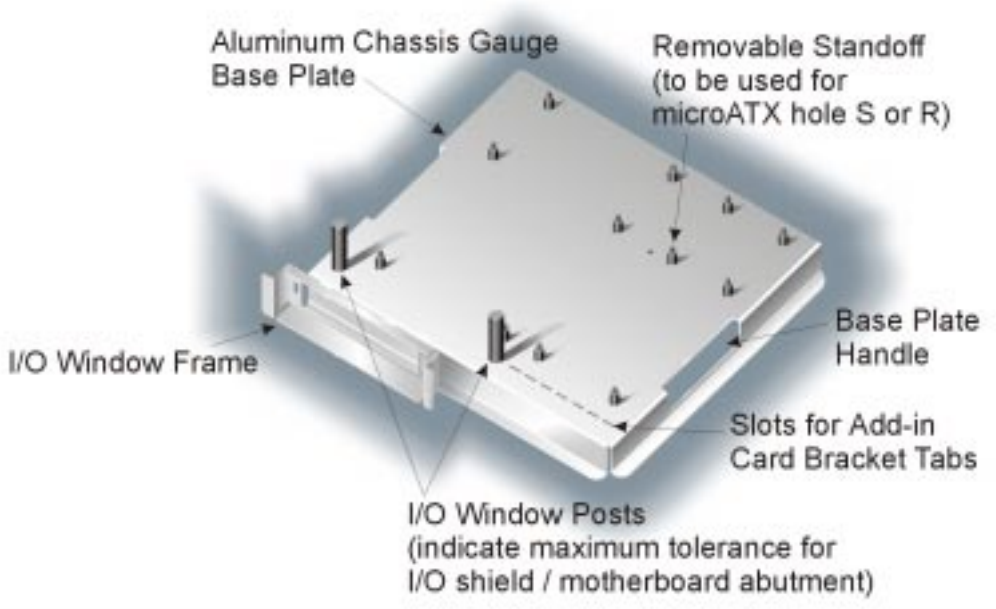

Figure 1. Base Plate and I/O Window Frame Gauge

CAUTION

To minimize the risk of stripping the screw threads, do not overtighten the screws that attach standoffs to the base plate.

1. Figure 1 shows the aluminum base plate with the removable standoff.
   - Full-sized ATX—To evaluate full-sized ATX motherboard designs, leave the removable standoff mounted on the bottom side of the base plate for safekeeping.
   - microATX—To evaluate microATX motherboard designs, unscrew the standoff from the bottom of the base plate, and screw it into hole S or R, depending on the dimension of the microATX motherboard you are evaluating and the location of the hole in your motherboard (see the *microATX Motherboard Interface Specification* for details). A microATX motherboard should have either the S or R hole, but not both.
2. Place your motherboard over the base plate, positioning it on the standoffs.
3. Verify that the positions of the mounting holes with the standoffs comply with the specification (ATX or microATX). The standoffs should locate with and just fit through the motherboard mounting holes (.156 dowel diameter)—go on easily but with a snug fit.
4. Use a copy of the blank test log at the end of this document to record any violations of board dimensions or mounting hole locations.
5. Next, place PCI, ISA, and/or AGP add-in cards in the appropriate motherboard connectors. Guide each card bracket tab into a slot on the base plate to ensure proper placement of the add-in card connectors.
6. In your test log, record any violations of add-in card connector placement.

Check the Maximum Component Heights

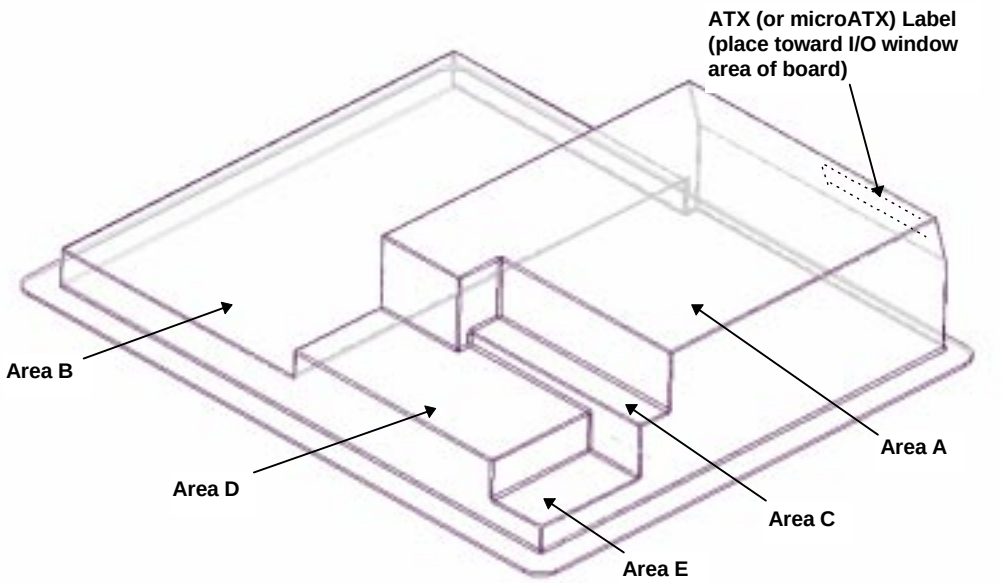

Figure 2. Plastic Cover (cover for ATX shown)

Figure Note: The table defines the height requirements for the areas shown in Figure 2. In each area, the motherboard cannot have any component higher than the measurement listed for that area—for example, no higher than 2.80 inches [71.12mm] in Area A.

Area	Maximum height of motherboard components
A	2.80 inches [71.12mm]
B	0.60 inches [15.24mm] (expansion slot area)
C	1.50 inches [38.10mm] (see Notes)
D	1.20 inches [30.48mm] (see Notes)
E	0.35 inches [8.89mm] (see Notes)

Notes

The maximum component height requirement assumes a motherboard thickness of 0.062” (1.57 mm). The maximum heights specified for Areas C, D, and E are intended to avoid interference between motherboard components and the chassis structure and to provide compatibility between the microATX and ATX 2.01 or higher specifications. For detailed dimensions, see the ATX or microATX specification.

We recommend that you use a nonfunctional motherboard for this part of the evaluation.

1. If you installed any add-in cards on the motherboard for testing in the previous steps, remove the add-in cards now.
2. Select the correct plastic cover for your product (ATX or microATX).
3. Lower the plastic cover over the motherboard and press it down onto the base plate, registering it against the front and left-hand edge of the board (as viewed with the I/O window frame gauge toward you).
4. The cover should be flush with the base plate on all sides, without any vertical gaps at any point. If there is any vertical gap, this indicates that a component is infringing on the keepout area as stated in the motherboard specification. Do a visual check to see which component has exceeded the maximum component in which area.
5. If you are testing with a nonfunctional board, you may want to remove any component that abuts against the cover. Repeat the process until you have identified all components in violation.

   If you are testing with a functional board, you might prefer not to remove components; in this case, you can identify only the first component height violation.

Check the I/O Shield and Window

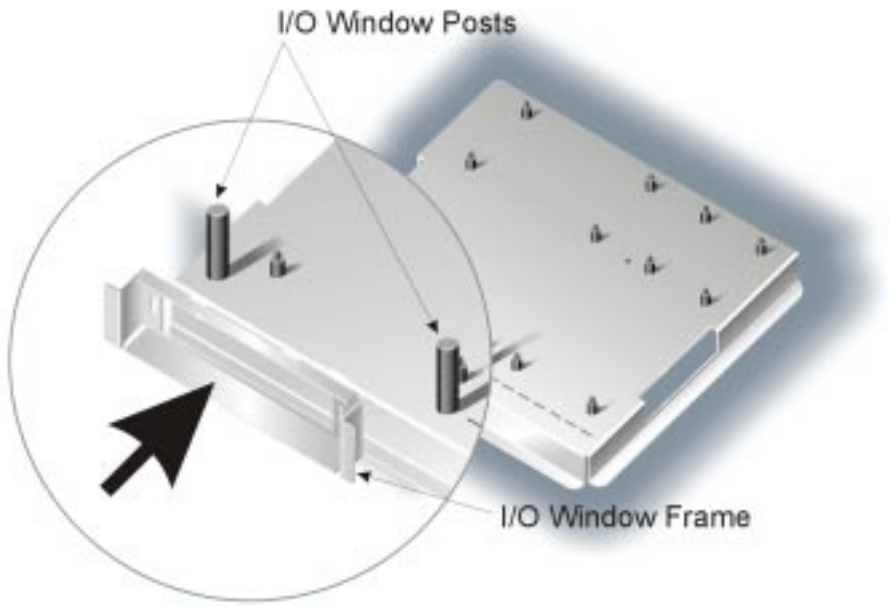

Figure 3. I/O Window Frame Gauge

Figure 3 shows the I/O window frame gauge and the I/O window posts. The six notches along the edges of the frame indicate the allowed bezel overhang for I/O shield designs.

1. One long edge of the I/O window frame has a green felt-like strip affixed on the bottom. This is the bottom, wider edge of the frame. Match the bottom of the frame with the bottom edge of your I/O shield.
2. Without using excessive force, insert the I/O shield into the frame so that the shield locates and clips into place, stays in place, and does not fit too loosely (is not sloppy).
3. Visually check the shield height and width to make sure these dimensions are within tolerance. Make sure that any frame or bezel feature on the I/O shield does not extend farther than the inner edges of the six notches around the outside of the frame (notches not shown in Figure 3).
4. The bezel that surrounds the I/O shield is not allowed to be more than 100/1000th of an inch larger than the aperture. The notches in the frame gauge are machined to within .1 of an inch of the maximum aperture opening. It is mechanically acceptable that your shield is smaller than the maximum allowed.
5. With your motherboard still mounted to the base plate, place the frame/shield assembly against and between the I/O window posts on the base plate. Make sure the wide flange of the I/O window gauge is toward the bottom and is flush with the surface of the base plate.

   The posts and frame indicate the allowed motherboard boundary at the back of the chassis. Verify proper placement of the I/O shield with respect to the motherboard.
6. Make sure the position of the board with respect to the back of the chassis is correct. Each I/O connector on the motherboard can move in three axes, so the shield must be in the correct position for all three directions (left to right; top to bottom; in/out).

Parts List

Table 1 lists components or subassemblies of the gauge. Although some of the items contain subcomponents, dismantling beyond the level detailed here is outside the scope of normal use.

Table 1. Chassis Gauge Parts List

Item	Quantity	Description
1	1	12.4-inch × 14.6-inch (315mm × 371mm) base plate, 0.075 inch thickness (1.9mm), aluminum alloy, red anodized (including standoffs, I/O window posts, and standoffs, including one removable standoff for either hole S or R on a microATX motherboard).
2	1	I/O window frame gauge, galvanized mild steel, with felt-like padding
3	1	10.5-inch × 13-inch (267mm × 330mm) ATX molded plastic cover
4	1	10.5-inch × 11.2-inch (267mm × 285mm) microATX molded plastic cover

5. Conversion Tables

EXAMPLES, how to use Tables 2 and 3

Use Table 2 to convert millimeters to inches. In the example below, start with a value of 71.12mm and convert it to inches. You must divide the result by 1000, because Table 2 gives values in 1/1000 inch.

EXAMPLE Using Portion of Table 2: Millimeters (mm) to inches

mm	0.000	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000
0.000	0.00	39.37	78.74	118.11	157.48	196.85	236.22	275.59	314.96	354.33	393.70
0.025	0.98	40.35	79.72	119.09	158.46	197.83	237.20	276.57	315.94	355.31	394.69
0.050	1.97	41.34	80.71	120.08	159.45	198.82	238.19	277.56	316.93	356.30	395.67
0.075	2.95	42.32	81.69	121.06	160.43	199.80	239.17	278.54	317.91	357.28	396.65
0.100	3.94	43.31	82.68	122.05	161.42	200.79	240.16	279.53	318.90	358.27	397.64
0.125	4.92	44.29	83.66	123.03	162.40	201.77	241.14	280.51	319.88	359.25	398.62

Millimeters to inches (Table 2), starting with 71.12mm
10mm = 393.70; for 70mm, multiply by 7 = 2755.9
1.125mm = 44.29
2755.9 + 44.29 = 2800.19 ÷ 1000 = **2.8 inches**

Use Table 3 to convert inches to millimeters. In the example below, start with a value of 2.8 inches and convert it to millimeters.

EXAMPLE Using Portion of Table 3: Inches to Millimeters (mm)

inch	0.0000	0.1000	0.2000	0.3000	0.4000	0.5000	0.6000	0.7000	0.8000	0.9000	1.0000
0.0000	0.00	2.54	5.08	7.62	10.16	12.70	15.24	17.78	20.32	22.86	25.40
0.0025	0.06	2.60	5.14	7.68	10.22	12.76	15.30	17.84	20.38	22.92	25.46

Inches to millimeters (Table 3), starting with 2.8 inches
1.0” = 25.40mm; for 2.0”, multiply by 2 = 50.80mm
0.8 “ = 20.32mm
2.8” = 50.80mm + 20.32mm = **71.12mm**

Table 2: Millimeters (mm) to Inches

mm	0.000	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000
0.000	0.00	39.37	78.74	118.11	157.48	196.85	236.22	275.59	314.96	354.33	393.70
0.025	0.98	40.35	79.72	119.09	158.46	197.83	237.20	276.57	315.94	355.31	394.69
0.050	1.97	41.34	80.71	120.08	159.45	198.82	238.19	277.56	316.93	356.30	395.67
0.075	2.95	42.32	81.69	121.06	160.43	199.80	239.17	278.54	317.91	357.28	396.65
0.100	3.94	43.31	82.68	122.05	161.42	200.79	240.16	279.53	318.90	358.27	397.64
0.125	4.92	44.29	83.66	123.03	162.40	201.77	241.14	280.51	319.88	359.25	398.62
0.150	5.91	45.28	84.65	124.02	163.39	202.76	242.13	281.50	320.87	360.24	399.61
0.175	6.89	46.26	85.63	125.00	164.37	203.74	243.11	282.48	321.85	361.22	400.59
0.200	7.87	47.24	86.61	125.98	165.35	204.72	244.09	283.46	322.83	362.20	401.57
0.225	8.86	48.23	87.60	126.97	166.34	205.71	245.08	284.45	323.82	363.19	402.56
0.250	9.84	49.21	88.58	127.95	167.32	206.69	246.06	285.43	324.80	364.17	403.54
0.275	10.83	50.20	89.57	128.94	168.31	207.68	247.05	286.42	325.79	365.16	404.53
0.300	11.81	51.18	90.55	129.92	169.29	208.66	248.03	287.40	326.77	366.14	405.51
0.325	12.80	52.17	91.54	130.91	170.28	209.65	249.02	288.39	327.76	367.13	406.50
0.350	13.78	53.15	92.52	131.89	171.26	210.63	250.00	289.37	328.74	368.11	407.48
0.375	14.76	54.13	93.50	132.87	172.24	211.61	250.98	290.35	329.72	369.09	408.46
0.400	15.75	55.12	94.49	133.86	173.23	212.60	251.97	291.34	330.71	370.08	409.45
0.425	16.73	56.10	95.47	134.84	174.21	213.58	252.95	292.32	331.69	371.06	410.43
0.450	17.72	57.09	96.46	135.83	175.20	214.57	253.94	293.31	332.68	372.05	411.42
0.475	18.70	58.07	97.44	136.81	176.18	215.55	254.92	294.29	333.66	373.03	412.40
0.500	19.69	59.06	98.43	137.80	177.17	216.54	255.91	295.28	334.65	374.02	413.39
0.525	20.67	60.04	99.41	138.78	178.15	217.52	256.89	296.26	335.63	375.00	414.37
0.550	21.65	61.02	100.39	139.76	179.13	218.50	257.87	297.24	336.61	375.98	415.35
0.575	22.64	62.01	101.38	140.75	180.12	219.49	258.86	298.23	337.60	376.97	416.34
0.600	23.62	62.99	102.36	141.73	181.10	220.47	259.84	299.21	338.58	377.95	417.32
0.625	24.61	63.98	103.35	142.72	182.09	221.46	260.83	300.20	339.57	378.94	418.31
0.650	25.59	64.96	104.33	143.70	183.07	222.44	261.81	301.18	340.55	379.92	419.29
0.675	26.57	65.94	105.31	144.69	184.06	223.43	262.80	302.17	341.54	380.91	420.28
0.700	27.56	66.93	106.30	145.67	185.04	224.41	263.78	303.15	342.52	381.89	421.26
0.725	28.54	67.91	107.28	146.65	186.02	225.39	264.76	304.13	343.50	382.87	422.24
0.750	29.53	68.90	108.27	147.64	187.01	226.38	265.75	305.12	344.49	383.86	423.23
0.775	30.51	69.88	109.25	148.62	187.99	227.36	266.73	306.10	345.47	384.84	424.21
0.800	31.50	70.87	110.24	149.61	188.98	228.35	267.72	307.09	346.46	385.83	425.20
0.825	32.48	71.85	111.22	150.59	189.96	229.33	268.70	308.07	347.44	386.81	426.18
0.850	33.46	72.83	112.20	151.57	190.94	230.31	269.69	309.06	348.43	387.80	427.17
0.875	34.45	73.82	113.19	152.56	191.93	231.30	270.67	310.04	349.41	388.78	428.15
0.900	35.43	74.80	114.17	153.54	192.91	232.28	271.65	311.02	350.39	389.76	429.13
0.925	36.42	75.79	115.16	154.53	193.90	233.27	272.64	312.01	351.38	390.75	430.12
0.950	37.40	76.77	116.14	155.51	194.88	234.25	273.62	312.99	352.36	391.73	431.10
0.975	38.39	77.76	117.13	156.50	195.87	235.24	274.61	313.98	353.35	392.72	432.09
	1/1000 inch										

Table 3: Inches to Millimeters (mm)

inch	0.0000	0.1000	0.2000	0.3000	0.4000	0.5000	0.6000	0.7000	0.8000	0.9000	1.0000
0.0000	0.00	2.54	5.08	7.62	10.16	12.70	15.24	17.78	20.32	22.86	25.40
0.0025	0.06	2.60	5.14	7.68	10.22	12.76	15.30	17.84	20.38	22.92	25.46
0.0050	0.13	2.67	5.21	7.75	10.29	12.83	15.37	17.91	20.45	22.99	25.53
0.0075	0.19	2.73	5.27	7.81	10.35	12.89	15.43	17.97	20.51	23.05	25.59
0.0100	0.25	2.79	5.33	7.87	10.41	12.95	15.49	18.03	20.57	23.11	25.65
0.0125	0.32	2.86	5.40	7.94	10.48	13.02	15.56	18.10	20.64	23.18	25.72
0.0150	0.38	2.92	5.46	8.00	10.54	13.08	15.62	18.16	20.70	23.24	25.78
0.0175	0.44	2.98	5.52	8.06	10.60	13.14	15.68	18.22	20.76	23.30	25.84
0.0200	0.51	3.05	5.59	8.13	10.67	13.21	15.75	18.29	20.83	23.37	25.91
0.0225	0.57	3.11	5.65	8.19	10.73	13.27	15.81	18.35	20.89	23.43	25.97
0.0250	0.64	3.18	5.72	8.26	10.80	13.34	15.88	18.42	20.96	23.50	26.04
0.0275	0.70	3.24	5.78	8.32	10.86	13.40	15.94	18.48	21.02	23.56	26.10
0.0300	0.76	3.30	5.84	8.38	10.92	13.46	16.00	18.54	21.08	23.62	26.16
0.0325	0.83	3.37	5.91	8.45	10.99	13.53	16.07	18.61	21.15	23.69	26.23
0.0350	0.89	3.43	5.97	8.51	11.05	13.59	16.13	18.67	21.21	23.75	26.29
0.0375	0.95	3.49	6.03	8.57	11.11	13.65	16.19	18.73	21.27	23.81	26.35
0.0400	1.02	3.56	6.10	8.64	11.18	13.72	16.26	18.80	21.34	23.88	26.42
0.0425	1.08	3.62	6.16	8.70	11.24	13.78	16.32	18.86	21.40	23.94	26.48
0.0450	1.14	3.68	6.22	8.76	11.30	13.84	16.38	18.92	21.46	24.00	26.54
0.0475	1.21	3.75	6.29	8.83	11.37	13.91	16.45	18.99	21.53	24.07	26.61
0.0500	1.27	3.81	6.35	8.89	11.43	13.97	16.51	19.05	21.59	24.13	26.67
0.0525	1.33	3.87	6.41	8.95	11.49	14.03	16.57	19.11	21.65	24.19	26.73
0.0550	1.40	3.94	6.48	9.02	11.56	14.10	16.64	19.18	21.72	24.26	26.80
0.0575	1.46	4.00	6.54	9.08	11.62	14.16	16.70	19.24	21.78	24.32	26.86
0.0600	1.52	4.06	6.60	9.14	11.68	14.22	16.76	19.30	21.84	24.38	26.92
0.0625	1.59	4.13	6.67	9.21	11.75	14.29	16.83	19.37	21.91	24.45	26.99
0.0650	1.65	4.19	6.73	9.27	11.81	14.35	16.89	19.43	21.97	24.51	27.05
0.0675	1.71	4.25	6.79	9.33	11.87	14.41	16.95	19.49	22.03	24.57	27.11
0.0700	1.78	4.32	6.86	9.40	11.94	14.48	17.02	19.56	22.10	24.64	27.18
0.0725	1.84	4.38	6.92	9.46	12.00	14.54	17.08	19.62	22.16	24.70	27.24
0.0750	1.91	4.45	6.99	9.53	12.07	14.61	17.15	19.69	22.23	24.77	27.31
0.0775	1.97	4.51	7.05	9.59	12.13	14.67	17.21	19.75	22.29	24.83	27.37
0.0800	2.03	4.57	7.11	9.65	12.19	14.73	17.27	19.81	22.35	24.89	27.43
0.0825	2.10	4.64	7.18	9.72	12.26	14.80	17.34	19.88	22.42	24.96	27.50
0.0850	2.16	4.70	7.24	9.78	12.32	14.86	17.40	19.94	22.48	25.02	27.56
0.0875	2.22	4.76	7.30	9.84	12.38	14.92	17.46	20.00	22.54	25.08	27.62
0.0900	2.29	4.83	7.37	9.91	12.45	14.99	17.53	20.07	22.61	25.15	27.69
0.0925	2.35	4.89	7.43	9.97	12.51	15.05	17.59	20.13	22.67	25.21	27.75
0.0950	2.41	4.95	7.49	10.03	12.57	15.11	17.65	20.19	22.73	25.27	27.81
0.0975	2.48	5.02	7.56	10.10	12.64	15.18	17.72	20.26	22.80	25.34	27.88
	mm										

Reference Documents

- ATX Motherboard Specification, Version 2.01
- microATX Motherboard Interface Specification, Version 1.0
- Design Guide for Intel ATX Motherboard I/O Implementations
- ATX and microATX Board Gauge User Manual
- microATX System Design Suggestions
- microATX EMC Design Suggestions
- ATX Web site: *http://www.teleport.com/~atx/*
- microATX Web site: *http://www.teleport.com/~microatx/*

Suggested Test Plan

Table 4 summarizes the relevant sizes or clearances for gauge components. Section 8 contains a blank test log and a mechanical checklist that you can use to record the results of your evaluation test.

Table 4. Gauge Dimension Summary

Component	Fig.	Relevant dimension, size	Clearance
Aluminum base plate	1	12.4-inch × 14.6-inch (315mm × 371mm) allows for mounting up to full size (12.0-inch x 9.6-inch [305mm x 244mm]) ATX motherboards	N/A
I/O window frame gauge: Check I/O shield height and width Check that I/O shield does not overrun the keepout zones (for chassis-independent designs)	1 & 3	6.25-inch × 1.75-inch (158.75mm × 44.45mm) 0.1 inch (2.54mm) minimum keepout zone on both the inside and outside faces of the chassis back panel	Tolerance band = ±0.008-inch (0.2mm)
ATX clear molded cover	2	10.5-inch × 13-inch (267mm × 330mm)	Tolerance = 15/1000th
microATX clear molded cover	N/A	10.5-inch × 11.2-inch (267mm × 285mm)	Tolerance = 15/1000th

8. Test Log and Checklist

Test Log	Tested By:	
	Date:	
	Location:	
UUT Motherboard Details	Manufacturer:	
	Motherboard-Type:	
	Model/Part Number:	
	Revision:	
	Serial Number:	
	Notes:	
Chassis Gauge Details	Serial Number:	
	Revision Number:	
	ATX Specification Version:	
	microATX Specification Version:	

microATX Mechanical Test Checklist

(R) = Required feature (O) = Optional feature (I) = Informational feature

Motherboard Component Height Restrictions

(R) Maximum component height in Zone "A" 2.80 inches [71.12mm] Yes ☐ No ☐ Note _____

(R) Maximum component height in Zone "B" 0.60 inches [15.24mm] Yes ☐ No ☐ Note _____

(R) Maximum component height in Zone "C" 1.50 inches [38.10mm] Yes ☐ No ☐ Note _____

(R) Maximum component height in Zone "D" 1.20 inches [30.48mm] Yes ☐ No ☐ Note _____

(R) Maximum component height in Zone "E" 0.35 inches [8.89mm] Yes ☐ No ☐ Note _____

(I) Notes: _____

Motherboard Mechanical Features

Dimensions (width, depth, thickness): _____

Note any mounting holes not present: _____

(R) Mechanical Alignment of mounting holes ? Yes ☐ No ☐ Actual _____

"S" or "R" Mounting Hole: _____

(I) Additional Standoffs: _____

(I) Notes: _____

I/O Shield Details

(I) I/O Shield Provided By Vendor ? Yes ☐ No ☐ Actual _____

(R) Mechanical Alignment ? Yes ☐ No ☐ Actual _____

(R) I/O Aperture Keepout Area 0.100" Min. [2.54 mm] Yes ☐ No ☐ Actual _____

(I) EMI Fingers:_____

(I) Notes: _____

Plug-in Cards

(I) AGP Connector ? Yes ☐ No ☐ Location _____

(I) PCI & ISA Connectors ? _____

(II) Mechanical Alignment ? Yes ☐ No ☐ Actual _____

Pass/Fail Comments

	microATX board **9.6 inches × 9.6 inches (244mm × 244mm)**	**ATX board** **9.6 inches (244mm) wide × 12 inches (305mm) long**
Mounting Hole Locations		
Add-in Card Connector Locations		
Keepout Zones		
I/O Window Shield		